

Titration Problems

A 20.0 mL sample of 0.200 *M* HBr solution is titrated with 0.200 *M* KOH solution. Calculate the pH of the solution after the following volumes of base have been added:

- a. 15.0 mL b. 19.9 mL c. 20.0 mL d. 20.1 mL e. 35.0 mL

A 35.0 mL sample of 0.150 *M* acetic acid is titrated with 0.150 *M* NaOH solution. Calculate the pH of the solution after the following volumes of base have been added:

- a. 0.00 mL b. 17.5 mL c. 34.5 mL d. 35.0 mL e. 35.5 mL f. 50 mL

Consider the titration of 30.0 mL of 0.030 *M* NH₃ with 0.025 *M* HCl. Calculate the pH after the following volumes of titrant have been added:

- a. 0.00 mL b. 10.0 mL c. 20.0 mL d. 35.0 mL e. 36.0 mL f. 37.0 mL

Calculate the pH at the equivalence point in titrating 0.100 *M* solutions of each of the following with 0.10 *M* NaOH:

- a. Hydrobromic acid b. Lactic Acid c. Sodium hydrogen oxalate

Which indicators would best serve each titration?